

## Stories of modern science ... from UPI

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### BACTERIAL VIRUSES NEXT FOR VACCINES

The next generation of vaccines could come from genetically altered bacterial viruses, which British researchers say appear to be more effective than naked DNA in bringing forth an immune response. John March, a scientist at the Moredun Research Institute in the United Kingdom, says in theory, "millions of doses can be grown within a matter of days using simple equipment, media and procedures." Bacteriophages are viruses that infect bacteria but not humans. March's team used a bacteriophage as a vehicle for genes from hepatitis B virus in mice and compared its ability to draw forth a protective immune response with a vaccine made of naked DNA. They found not only could the bacteriophage induce an immune response, the number of bacteriophage they needed was less than 1 percent of the number of pieces of naked DNA required to mount an effective immune response.

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### CAR BUFFS HAVE MENTAL TRAFFIC JAMS

Car buffs can experience mental traffic jams when looking at autos and faces simultaneously, say Vanderbilt scientists. It appears they recognize their cars with the special part of the brain that also is used to identify faces and when they try to identify cars and faces at the same time, they experience a kind of perceptual gridlock. The Vanderbilt team, with help from colleagues at the University of Colorado at Boulder, compared how the brains of auto experts and novices process pictures of cars and faces. They found viewing cars elicits signals from the brains of car experts that are just like the signals evoked by viewing faces in other brains. Moreover, the experts' skill interfered with their ability to identify faces when they were forced to process cars and faces simultaneously. The findings challenge the widely held view a small, specialized area in the brain is specially hardwired to recognize faces.

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### THE FORGETFUL MOUSE

Johns Hopkins scientists have created a forgetful mouse by preventing a molecular event in brain cells required for storing spatial memories. The mice quickly forgot where to find a resting place in a pool of water, showing that subtly altering the chemistry of a certain protein can affect a brain cell's ability to respond to external stimulation or neuronal plasticity. The research team genetically altered part of a receptor that binds glutamate -- the most important excitatory chemical in the brain -- to create a version of the protein that could not be modified by adding phosphate groups. Preventing phosphorylation of the receptor kept it from responding normally to external stimulation and limited how long animals could store new memories. "Since 1986, phosphorylation has been recognized as a key to modulating receptor responses to neurotransmitters like glutamate, but this is the first demonstration that phosphorylation of a particular target protein mediates the processes we believe are behind learning and memory," says Richard Huganir, professor of neuroscience.

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### NEW FINDINGS ABOUT OLD GALAXIES

Using three of the most powerful telescopes available, University of Cambridge astronomers Elizabeth Stanway, Andrew Bunker and Richard McMahon have identified some of the farthest galaxies yet seen and a cosmic conundrum. It appears there were fewer galaxies forming stars at this early stage in the history of the universe than in the more recent past. A spectrum of one galaxy showed the signature of hydrogen gas glowing as it is illuminated by hot, newly born stars and measured the redshift to be 5.78. "This galaxy is in the process of giving birth to stars -- each year it converts a mass of gas more than 30 times that of our Sun into new stars," Bunker said. The researchers calculated how many galaxies there are involved in the rapid formation of stars in the very distant universe -- redshift 6 -- and compared the

answer with previous work looking at nearer galaxies, with redshifts around 4. There are fewer of these galaxies early in the history of the universe, compared to more recent times, the concluded.

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